Docket No.: 2835-0168PUS1
(PATENT)

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Patent Application of:
Marja TIITTA et al.

Application No.: NEW

Confirmation No.: N/A

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Art Unit: N/A

For: CATALYST AND METHOD FOR THE PREPARATION THEREOF

Examiner: Not Yet Assigned

LETTER

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

The PTO is requested to use the amended sheets/claims attached hereto (which correspond to Article 19 amendments or to claims attached to the International Preliminary Examination Report (Article 34)) during prosecution of the above-identified national phase PCT application.

If necessary, the Commissioner is hereby authorized in this, concurrent, and future replies to charge payment or credit any overpayment to Deposit Account No. 02-2448 for any additional fees required under 37.C.F.R. §1.16 or 1.14; particularly, extension of time fees.

Dated: May 16, 2006

Respectfully submitted,

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Attachment(s)

1. A method for the manufacture of a noble metal catalyst for hydrocarbon conversion, **characterized** in that the method comprises the following steps:

    a) Pre-treatment of a support comprising a zeolite selected from medium and large pore zeolites having acid sites, at a temperature between 423 – 1173 K, and optional modification of the support;
    b) Deposition of a noble metal selected from platinum, palladium, ruthenium, rhodium, iridium and mixtures and combinations thereof by gas phase deposition technique comprising vaporisation of the noble metal precursor selected from β-diketonates and metallocenes and reaction with the support, and
    c) Heat treatment at oxidising or reducing conditions.

2. The method according to claim 1, **characterized** in that the noble metal is platinum.

3. The method according to claim 1 or 2, **characterized** in that the zeolite is selected from large pore zeolites having weak or medium strength of acid sites.

4. The method according to any one of claims 1 - 3, characterized in that the zeolite is selected from mesoporous aluminosilicates, crystalline aluminosilicates, crystalline aluminophosphates and crystalline aluminosilicophosphates.

5. The method according to any one of claims 1 - 4, characterized in that the zeolite is selected from MCM-41, Y- and beta-zeolites, mordenites, AlPO-5 and AlPO-11, SAPO-5 and SAPO-11.

6. The method according to any one of claims 1 - 5, **characterized** in that the support further comprises inorganic oxide, carbon related material or mixtures or combinations thereof.

7. The method according to claim 6, **characterized** in that the inorganic oxide is selected from silicon oxide, aluminum oxide, titanium oxide, zirconium oxide, tungsten oxide and magnesium oxide, preferably from silicon oxide and aluminum oxide.

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8. The method according to claim 6, **characterized** in that the carbon related material is selected from activated carbon, graphite and carbon nanotubes.

9. The method according to any one of claims 1 - 8, **characterized** in that the noble metal precursor is $(CH_3)_3(CH_3C_5H_4)Pt$.

10. The method according to any one of claims 1 - 9, **characterized** in that the zeolite is MCM-41.

11. The method according to any one of claims 1 - 10, **characterized** in that in the first process step a) the support is pre-treated at a temperature of 423–1173 K, and in the second step b) the deposition is carried out in the presence of an inert carrier gas.

12. The method according to claim 11, **characterized** in that the inert carrier gas is nitrogen, helium, argon or methane.

13. The method according to any one of claims 1 - 12, **characterized** in that the modification in the first step a) is carried out by blocking part of available surface sites on the support with a blocking agent selected from alcohols, acetyl acetone, 2,2,6,6-tetramethyl-3,5-heptanedione, precursors of silicon oxide, aluminum oxide, titanium oxide, zirconium oxide, tungsten oxide and magnesium oxide, and nitrates.

14. The method according to claim 13, **characterized** in that the blocking agent is silicon tetrachloride, tetramethoxysilane, tetraethoxysilane, hexamethyldisilazane, hexamethyldisiloxane, aluminum chloride, aluminum ethoxide, aluminum (III) acetylacetonate, tris(2,2,6,6,-tetramethyl-3,5-heptanedionato)aluminum, trimethyl aluminum, triethyl aluminum, titanium tetrachloride, titanium isopropoxide, zirconium tetrachloride, tungsten oxychloride, tungsten hexachloride or tris(2,2,6,6-tetramethyl-3,5-heptanedionato) magnesium.

15. Use of the noble metal catalyst manufactured according to the method of any one of claims 1 - 14 in ring-opening, isomerisation, alkylation, hydrocarbon reforming, dry reforming, hydrogenation and dehydrogenation reactions, and preferably in ring-opening of naphthenic molecules.

16. A process for the manufacture of middle distillate diesel fuel, **characterized** in that a middle distillate feedstock is transferred to a reactor wherein it is allowed to react at a temperature of 283 - 673 K and under a pressure of 10 – 200 bar with hydrogen in the presence of a noble metal catalyst manufactured according to the method of any one of claims 1-14 to accomplish opening of naphthenes with two and multiple rings to produce isoparaffins, n-paraffins and mononaphthenes in the middle distillate region.